

PUZZLE

Subject: 1422-Cardio Pulmonary Bypass and Perfusion Technology

UNIT – I - Metabolic aspects of total heart – Lung bypass

Reasoning Puzzle: "Metabolic Mystery in Total Heart–Lung Bypass"

Objective

Teams act as metabolic detectives to solve a puzzle about the metabolic changes and management during total heart–lung bypass (CPB). This activity builds reasoning, teamwork, and clinical decision-making skills in cardiac surgery.

Instructions for Teams

1. **Form teams** of 4–5 members.
2. Each team receives the following scenario:

Case: A 58-year-old patient is undergoing total heart–lung bypass for complex cardiac surgery. During CPB, the perfusionist notes a rising blood lactate level (from 1.5 to 4.5 mmol/L), mild metabolic acidosis, and fluctuating blood glucose. The patient is mildly hypothermic. The team must reason through the clues to:

- Identify **two key metabolic changes** occurring during CPB.
- List **two possible causes** for the rising lactate.
- Propose **two management steps** to address these metabolic issues.
- If the facilitator announces a twist (*"Glucose drops to 60 mg/dL and lactate rises further"*), teams must quickly update their management plan.

Rubrics (10 Marks Total)

Criteria	Description	Marks
Correct Identification	Key metabolic changes and causes	3
Reasoning & Justification	Logical explanation for answers	2
Management Plan	Appropriate, prioritized management steps	2
Team Collaboration	All members contribute and discuss	2
Adaptability	Quality of response to the twist	1
Total		10